MALARIA?

Vol. 1 No. 9 HQ, MALARIA CONTROL, APO 503 25 August 1944

To All Those Combatting Malaria!

Congratulations are long overdue to all who have had a part in this program. Brigadier General Denit, The Chief Surgeon USAFFE, has expressed his pleasure in the reduction of malaria attacks and the reduction of anopheline mosquitos, thus preventing many from ever becoming infected.

As Assistant Chief Malariologist SWPA, I want to welcome the many new units and the experienced units and malariologists of the 14th Corps, now assigned to this theater.

We all have the same aims, first to keep the men on their feet fit to fight, second to prevent all mosquitoes from carrying malaria to our uninfected or treated troops.

Continue the good work and we'll "take em."

G. L. ORTH
Lt. Col., M. C.

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Request unit rosters of officers and enlisted men from all units in South Pacific and Southwest Pacific.

This office receives numerous queries as to the whereabouts of friends in malaria control work and this information would also expidite forwarding of poorly addressed mail which is received here.

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An analysis of the malaria case cards for June by Major Donald S. Patterson, showed the following rates for New Guinea by Commands:

Sixth Army	55.6
USASOS	28.7
Far East Air Force	43.4
5th A. F.	45.7
13th A. F.	15.3
14th Antiaircraft Command	36.8
USAFFE	17.7
Grand Total	43.0

The highest area incidence was noted in Aitape with an area attack rate of 222.8.

Anopheline Vectors in Advance Areas.

During the month of July Major Patterson made a review of pertinent publications of medical information of areas in advance of present territory held by forces in the S.W.P.A. theater. The following anopheline vectors of importance can be expected to be encountered:

?	5	A. leucosphyrus
?	1	A. barbirostris var barbumbrosa
?	3	A. hyrcanus var pseudopectus, or nigerrima
?	4	A. kochi ?
*	9	A. punctulatus and its var. moluccensis
?	10	A. (punct.) tesselatus ?
*	11	A. subpictus
*	8	A. minimus var flaverostris
?	2	A. filipinae
? *	7	A. mangyanus
? *	6	A. maculatus

* - Strong vector
? - Questionable vector
? * - Probable important vector

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DDT Experiments and Conclusions.

Captain Karl V. Krombein, Sn.C., of the 32nd Malaria Survey Unit, after conducting a series of experiments to determine the duration of mosquito larvicidal action of DDT, offers the following conclusions:

"(1) It seems evident that no appreciable greater lasting effect is obtained with the minimal amounts of DDT in distillate needed to control breeding than with a massive amount of plain distillate, and, therefore, that spraying should be carried out weekly when using DDT in distillate in the minimal amounts.

"(2) However, in non-moving waters control probably can be maintained for three weeks (before adults can emerge) if a massive dose of DDT in oil be used."

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Captain James W. Brooks, Sn.C., of the 45th Malaria Survey Unit reports that 5% DDT dissolved in oil and applied by means of a "flit gun" or hand sprayer, acts as an excellent larvicide with toxic effect lasting approximately 5 days. Dosage averaged approximately 1 gallon of toxicant in oil per acre of surface water.

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Captain Bruce E. Sasse, Sn.C., reports on airplane spraying of DDT.

"One advanced section of Naval Medical Research Unit No. 2 has been working in cooperation with the local Island Malaria Control and Survey Units for the past months on the problem of spraying a mixture of diesel oil, lubricating oil, and DDT from an L4-B Piper Cub airplane.

The mixture used is 5% DDT and equal amounts of diesel #2 oil and lubricating oil (S.A.E. #10). This mixture is applied at the rate of approximately 1½ quarts per acre. With the equipment now in use about 150 acres per hour can be sprayed.

Three areas were selected, each about 150 acres in size. One area was densely wooded; the second was an open grassy field very much cut up with road ruts; the third area was half jungle and half grassy field.

Careful survey was made of each of these areas and flags put up indicating puddles and ruts breeding mosquitoes and record made as to whether they were breeding anophelines or culicines or both. The three areas were then sprayed from an airplane. The entire area was then re-surveyed within twenty-four hours. Anopheline larvae were found at only one station and culicine larvae at two stations previously marked as breeding spots. While this was almost 100% kill, observers at the time of application noted that each of these three stations were missed by the airplane due to the fact of the pilot getting off his course. It is believed that with a little more practice by the pilot so that he obtains 100% accuracy in covering, it will be 100% kill of either open grassy land, coconut groves, or the most densely wooded areas. Over the open field the pilot flew about 15 to 25 feet, over the jungle about 100 to 150 feet. The average width of a single swath was about 40 feet.

There were numerous occasions to observe that the spray could effectively penetrate through very narrow openings with 100% kill. In many instances, small breeding surfaces were noted to be under a heavy canopy of vegetation, yet there was sufficient spray falling on the water to kill anopheline and culicine larvae. In one observed instance the insecticide killed larvae of a species that usually breeds in small pickets of water in the petiole sheath of the "elephant ear." The plane in these instances had flown over the location at a height of 150 to 175 feet.

The equipment for installation in the aircraft was developed by Mr. Chester N. Husman at Orlando, Florida. The spray apparatus is for use in the L-4B, 65 H.P. Piper Cub plane.

To date, no work has been done to find out what percentage of kill of the adult population could be obtained. However, work along this line in now being carried out. Effort is now being made to obtain sufficient equipment and enough Cub planes so that whole areas may be controlled by plane spraying."

The above article was quoted from the Headquarters Malaria and Epidemic Control South Pacific newsletter of July 1944.

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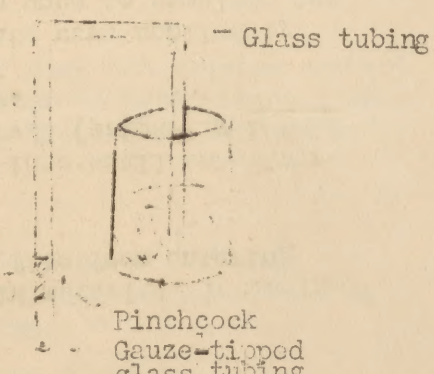
We are indebted to Captain Karl V. Krombein, Sn. C., for his report on the "Toxicity of Water Treated with DDT to Mosquito Larvae." His experimental procedure was most interesting and we present his report verbatim.

1. It is recognized that the amount of DDT-in-distillate required to kill mosquito larvae is considerable less than the amount of distillate required. It is assumed that the main effect of the DDT-in-distillate on larvae is due to the contact of the larvae with the film of DDT on the surface of the water. However, the experiments described below show that contact with a surface of DDT film (or dispersed solid particules) is unnecessary to kill larvae; the solubility of the DDT in water being great enough to make the subsurface water toxic.

2. Experimental procedure.

a. For these experiments a set-up which is illustrated in the accompanying diagram was employed. This set-up allows the water to be siphoned off without disturbing the surface film, and was completely installed in each case before the DDT or distillate was added.



b. The water in the ½ pint mason jars used was 3" deep with a surface area of about 12 square inches.

c. In all cases at least 1/4" of water was left in the jar after siphoning to insure that none of the surface water passed over.

d. The gauze-tipped tubing prevented solid material, including dead larvae, which might have contacted the surface film from entering the test bowls.

e. The subsurface water was siphoned off into small enamelware bowls containing anywhere from 10 to 25 Culicine larvae (primarily Lutuia halifaxi and Aedes veriegatus) to determine toxicity.

f. Both distillate and 5% DDT-in-distillate were applied by dropping from a pipette. The surface was then blown upon to simulate the spreading effect of air currents. Untreated controls were also run simultaneously.

g. The jars treated with the distillate and the DDT always contained larvae to test the efficacy of the original killing effect. In all cases the distillate and the DDT were used in high enough concentrations to have a 100% killing effect within a few hours.

h. In describing the experiments, the number connected by a dash to the preceding term indicates the number of drops used, e.g. DDT-3 = 3 drops of 5% DDT-in-distillate; Dist-6 = 6 drops of plain distillate; cont. = untreated.

3. Experiment I - Heavy surface treatment with distillate and 5% DDT-in-distillate.

a. Procedure. Half-pint mason jars set up as listed. Four days later water siphoned off, surface undistrubed. Larvae added to siphoned water.

b. Results.

	% Kill after 24 hrs.		% Kill after 24 hrs.
I Cont.	0	I DDT-1	100
II Cont.	0	II DDT-1	80
III Cont.	0	IIIA DDT-1	90
I Dist.-3	12	IIIB DDT-1	90
II Dist.-6	0	I DDT-2	100
IIIA Dist.-6	0	II DDT-2	80
IIIB Dist.-6	0	I DDT-3	100
		II DDT-3	80

c. Discussion: Between 80 and 100% kill is obtained within 24 hours from subsurface water treated with DDT 4 days before testing. No similar effect was observed with subsurface water treated with plain distillate.

4. Experiment II - Light surface treatment with distillate and 5% DDT-in-distillate.

a. Procedure.

(1) In this experiment 3 enamelware pails were set up containing 10" of water and with about 100 square inches of water surface. One was treated with 2 drops of 5% DDT-in-distillate (DDT-2), another with 6 drops of plain distillate (Dist.-6), and a third was untreated (Cont.). The distillate and DDT were both used in quantities sufficient to kill 50 larvae in each pail.

(2) Samples were siphoned off each pail every 24 hours for 5 days. The toxic effect was Noted for 3 successive days in each sample.

b. Results.

Samples drawn off water	% Kill after 24 hours			% Kill after 48 hours			% Kill after 72 hours		
	Cont.	Dist-6	DDT-2	Cont.	Dist-6	DDT-2	Cont.	Dist-6	DDT-2
24 hrs A	0	0	70*	0	0	100	0	0	100
24 hrs B	0	0	65*	0	0	100	0	0	100
48 hrs	5	20	100	35	55	100	35	60	100
72 hrs	0	0	100	0	0	100	0	0	100
96 hrs	0	0	95	10	15	100	25	20	100
120 hrs	20	10	100	20	20	100	20	30	100

* 1-2 larvae pupated

c. Discussion.

In all cases there was 100% kill with the DDT-treated subsurface water in 48 hours. In 24 hours there was almost 100% kill with the exception of the pupae formed. DDT does not appear to affect the pupae. The plain distillate shows some possible effect in the 48 hours sample; however a total of 35 larvae was used in each bowl for testing, and the % deaths is appreciable in the untreated controls.

5. Experiment III - Massive surface treatment with distillate and 5% DDT-in-distillate.

a. Procedure.

(1) In this experiment 3 large ointment jars were filled with 5 inches of water with a surface of about 20 square inches. One was treated with 10 drops of 5% DDT-in-distillate (DDT-10), another with 20 drops of plain distillate (Dist.-20), and a third was untreated (Cont.).

(2) 5 days later, the subsurface waters were siphoned off and the % kill on 15 larvae was determined.

(3) A portion of the DDT and the distillate-treated water was diluted 1:10 (DDT-10, dil 1:10, and Dist.-20, dil 1:10), and toxicity was tested.

b. Results.

	% Kill after 24 hours	% Kill after 48 hours	% Kill after 72 hours	% Kill after 96 hours
Cont.	0	0	0	50
Dist-20	10	20	-	-
Dist-20, dil 1:10	0	30	-	-
DDT-10	85	100	100	-
DDTA-10A, dil 1:10	15	30	-	50
DDT-10B, dil 1:10	30	60	-	-

c. Discussion: The undiluted DDT-treated subsurface water again shows 100% kill in 48 hours. But when diluted (1:10) the killing effect is negligible and compares with the toxicity of the plain distillate-treated water.

6. Conclusion: The larvicidal action of DDT does not require contact with the DDT-in-distillate film. The subsurface water in pools treated with DDT is toxic to mosquito larvae, whereas distillate treated subsurface water has virtually no larvicidal effect.

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We continue to receive reports on the effectiveness of DDT when sprayed from the air. It has consistently demonstrated a lethal effect on all mosquito larvae when there is sufficient coverage.

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Residual Effect of Diesel Oil on Incidence of Adult Malaria Mosquitoes

by

Captain W. R. Horsfall, Sn. C.

Little is known about the duration of the effect of a thorough application of diesel oil on abundance of malaria mosquitoes. Opportunity was afforded to observe results of such an application as an incident to work on flight range of Anopheles punctulatus typicus.

The valley of the Embogo River above and below Hanagela Village in a native area outside the confines of the base was the area treated. This part of the valley was only a few hundred yards wide, and all larval sites were confined to easily accessible pools mainly along exposed tracks, and highway. The village was the central point at which incidence of adult mosquitoes was determined.

The criterion of adult abundance was the number of mosquitoes collected daily on a section of the river bank 50 feet long. Each day all adult mosquitoes along this bank were collected and removed to the laboratory for other examinations. Initial incidence was established during the week ending 22 May 1944.

Oiling operations began 22 May 1944 and continued until 7 June 1944. Only the area within one-quarter mile of the village was oiled the first two weeks, and the third week all area within three-quarters mile was oiled. No oil was applied after June 7, 1944. That the job was thoroughly done was assured by repeated checks on all potential larval sites.

The mosquito population showed a downward trend to less than 10 percent of the original incidence during the week ending 19 June 1944. Each week thereafter adults began to appear in increasing abundance until they were as prevalent as ever six weeks after treatment was stopped.

At the beginning of the observations, 212 or 57 percent of the 362 potential larval sites had Anopheles larvae present. All were negative when oiling was completed. Six weeks after the last oil had been applied 205 positive larval sites were observed.

The practical significance of these observations is:

A. Control of malaria mosquitoes in this area about any center must extend for a radius of three-quarters mile in order to reduce the incidence to that of effectiveness.

B. The residual effect of oiling on Anopheles incidence for the area is not more than five weeks, for after six weeks no signs of control remain.

C. All former potential larval sites may become actual sites when the oil has been dissipated. A return to the natural state is governed by the rate of migration from the periphery and rate of reproduction in the area.

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Monthly reports submitted by the 26th MSU, 6th MCU and 34th MCU were particularly worthy of comment. In conjunction with clear and concise statement of facts, there were excellent photographs of typical projects and problems attached. A good picture adds a touch of glamour and creates interest in an otherwise routine report. The Signal Corps has been most cooperative and given valuable assistance in such matters, so turn on the personality and promote some interesting shots of your area, projects, advertising signs, etc.

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FLASH!

The many friends of Colonel W. V. King will be interested to hear of his marriage in Sydney, Australia. Congratulations and best wishes, Colonel King, from all the men.

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The following is an extract from the monthly report of the 67th Malaria Control Unit:

"In this area, the nightly blocking by silting of the stream mouths by the wave action at high tide presents a problem. Many of the streams find their source in swamps in back of the coast line, consquently, there is insuffiecient head to keep the mouths scoured out. The 8th Malaria Control Unit has been making a few installations of corrugated galvanized iron culvert pipe running from a point above the highest beach line to an elevation below low tide. This solution works well until the wave action y by constant pounding soon upheaves the pipe sections even though they are secured by the best means available. The 67th Malaria Control Unit has attempted the solution by the use of log baffles, both straight line and staggered alternate, but these are soon displaced by the waves. This unit is now resorting to the periodic cleaning of the mouths by man power with shovels. Knowledge of an effective means of combating this problem by other units who may have similar situations would be welcomed."

One possible solution to this problem is quoted from a report made by the 38th Malaria Control Unit.

"At the Blue Beach Swamp, storm wave action continually blocked the ditch outlet, so there was constructed a log retaining wall with flared wing walls and the results obtained appear to be satisfactory."

How about it? Any other suggestions?

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An interesting experiment made by the 87th Malaria Control Unit during the month of July is quoted below:

"During the last week of the month (July) experiments were made with oil soaked cocoanut husks hand-placed in coral rock crevices and artificial collections of undisturbed water impounded in tire ruts and borrow pits. The absorbent qualities of small pieces of husks, dried out before soaking in malariol, and a very small amount of castor oil to increase its spreading power, provides sufficient quantity of the larvacide to produce a complete film on the water surface. The husk absorbs four times its weight in oil and acts as a reservoir to renew the surface film when washed out in heavy rainfall. Laboratory analysis shows a toxic effect on mosquito larvae. Experiments are too recent to accurately estimate the potentialities of such larvicidal control."

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TO ALL MALARIOLOGISTS

From many areas the Malaria Case Report Cards are coming in improperly filled out by the hospitals. It is your responsibility to see all registrars and see that cards are completed accurately

Additional help may be given by having them write on the cards the primary cause of admission in cases where malaria is a secondary cause of lost man days.

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The 213th Malaria Survey Unit reports extensive pest breeding in bodies of vehicles deadlined or stored. Check your areas.

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SECRET

Pappataci Fever

by

1st Lt. J. T. Griffiths, SnC
26th Malaria Survey Unit

1. As per letter Sixth Army Headquarters dated 11 July 19[illegible], subject "Pappataci Fever", locations favorable to the breeding of insects belonging to the genus Phlebotomus were checked. No evidence of such flies, either as larvae or as adults, was found.

2. On the basis of evidence collected by the 37th Field Hospital at APO 565 unit 1, it is suggested that fevers of three day duration, not followed by a subsequent temperature rise, are not "sand flies" or "pappataci" fever, but rather, at least in some instances, are cases of atypical dengue fever.

a. At this hospital, case histories were carefully kept for 15 patients with fevers diagnosed as dengue. It is the opinion of the medical officer in charge that these are a representative sample of the dengue cases admitted by the hospital. Of these 15 cases, nine showed a typical saddle-back temperature curve while six had a fever of three days duration with no subsequent temperature rise. A comparison of the symptoms of these two temperature groups is presented in the enclosed Table.

b. The information in the table demonstrates the obvious similarity in the typical dengue-like symptoms between the two groups. Only in the instance of the presence of a rash is there any marked discrepancy. As suggested by the medical officers, this difference may be due to a failure to note or recognize the rash which is often light and ephemeral in nature.

c. Blood counts were made for 10 of the 15 patients and a slight leukipenia was usually present. Fifty per cent of the cases (either with a saddle-back temperature curve of without such a temperature relationship) showed a ratio of approximately 45/50 between polymorphonuclear leukocytes and lymphocytes. These conditions add confirmation to the diagnosis of dengue where saddle-back temperature curves are absent.

3. It is suggested that accounts of the presence in this area of the true "sand fly", genus Phlebotomus, have arisen from the fact that midges of the genus Culicoides are prevalent along beaches and are erroneously called "sand flies" and "sand fleas" by the troops in those areas. These midges are vicious biters and cause considerable annoyance where present. Irritation from a bite may be of several days duration. The casual observer might well conclude that these midges were true "sand flies".

A Comparison between Nine

Cases of Dengue with Saddle-back Temperature and

Six Cases of Dengue with an Initial Three Day Temperature Only

Symptom	Severity of Symptoms						Total Per Cent	
	% Severe*		% Moderate*		% Mild *			
	G-I	G-II	G-I	G-II	G-I	G-II	G-I	G-II
Head Ache	83	67	17	22	0	11	100	100
Eye Ache	83	22	0	33	17	33	100	89
Back Ache	67	56	0	22	17	22	83	100
Joint Ache	0	0	67	33	17	22	83	55
Chills	33	11	50	67	17	11	100	89
Rash	0	22	17	22	17	22	33	67

* G-I is group with 3 day fever only.
G-II is group with saddle-back temperature curve.

Culicines Identified.

The 37th Malaria Survey Unit at Lae reports the following Culicines as being identified.

(1) Aedes funereus (Theo)
(2) Aedes kochi (Donitz)
(3) Aedes notoscriptus (Skuse)
(4) Aedes papuensis (Taylor)
(5) Aedes vexans (Meigen)
(6) Aedomyia venustipes (?) (Skuse)
(7) Culex cylindricus (Theo)
(8) Culex hilli buxtoni (Edward)
(9) Culex fatigans (Wiedemann)
(10) Culex ferguson (Taylor)
(11) Culex fraudatrix (Theo)
(12) Culex gelidus (Theo)
(13) Uranotaenia albescens (Taylor)
(14) Uranotaenia atra (Theo)
(15) Uranotaenia papua (Brug)
(16) Uranotaenia pygmaea (Theo)

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Control On Bougainville.

"Oiling has been carried out from the onset of occupation and continues to require as many men as it did prior to the completion of extensive semi-permanent control. The controlled area has continuously increased in area and now extends to as much as a mile from many troops concentrations. The terrain has proved ideal for semi-permanent measures and extensive ditching with hand labor, heavy equipment, and explosives, has lowered the water table by as much as 4 feet, one-half mile from the beach. The systems of swamps have been dealt with - a series of coastal lagoons and marshes 50 to 200 feet in from the beach. Flumes have dropped the level of water in these to a considerable degree and provided tidal flushing. In addition to this decrease in marginal area, control has been made more efficient by clearing the margins with native labor and cutting channels so that small boats can reach all parts and dusting with Paris Green carried out. The second series of swamps, one-half to two miles inland, has been sliminated by clearing the choked rivers and cutting communication ditches. In many cases the reclaimed land has provided excellent bivouac areas."

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Entomology

Treasury Island. "Anopheline breeding was primarily confined to Mono Island. Specimens collected showed Anopheles punctulatus to be six times more common than A. punctulatus moluccensis*."

Munda. "Three species of anopheline have been found in this area: Anopheles punctulatus var moluccensis*, Anopheles lungae and an unclassified anopheline called Anopheles #3. Only the first of these appears to be a malarial vector. The large Lainana Swamp affords conditions of vegetation and shade ideal for Anopheles lungae but not for A. punctulatus moluccensis* which prefers sunlight. Anopheles #3 has been found along the margins of cool jungle streams, whose sources are underground caves. This species is rare, and has not been found within the control limits. Breeding of A. punctulatus moluccensis* was moderate in December 1943 and January 1944. Since February 1944, there has been a steady decline in densities."

* Possibly A. punctulatus farauti, the chief vector of malaria in this area and not A/ punctulatus moluccensis.

The above quotations were taken from a report made by Major Wilson M. Wing, M.C., Malariologist XIV Corps.

TO ALL MALARIA SURVEY AND CONTROL UNITS

Certain laxness in care of tools, vehicles, camp sanitation and general untidiness have been noted during the past two months. Get after your areas, pride in malaria control accomplishments in this theater demand we have the finest camps in the SWPA.

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This office has received advice that the Army Medical Museum in Washington will microfilm any article from any standard publication for a few dollars. Our reporter observed, that receipt has been effected in 20 days from the day ordered. With the film comes a handy little plastic gadget for viewing the material.

We are deeply indebted to Chaplain A. M. Keefe, Lt. Colonel of the 135th Medical Group (one of our loyal subscribers, by the way) for the above information.

Colonel Keefe also offers a suggestion to collectors of larvae. We quote, "Collectors will make the catching of specimens in their dippers a lot easier if they use a special type of pipette which I have found very useful. Three or four-inch pieces of ordinary glass tubing with fire-polished ends are inserted in the bulbs of ordinary pro-phylactic syringes available at any medical supply depot. The wide mouth of the glass tube makes for easy pic-ups, and the larger bulb gives a quick suction, and less damage to the specimen.

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New Malaria Puolication. W.D. Technical Bulletin Med 65, 3 July 1944, subject: "Drug Suppressive Treatment of Malaria". This bulletin supercedes those portions of SGO Circular Ltr. No. 153, 19 August 1943, relating to suppressive treatment of malaria. Principles as outlined in T B Med 65 follow those of the SWPA theater.

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The following two articles are quoted from "The Bulletin of the U.S. Army Medical Department"

"NEW MOSQUITO VECTOR OF ENCEPHALOMYELITIS"

"Since the initial finding by Kelser in 1933 of the ability of mosquitoes to transmit equine encephalomyelitis, at least ten species of Aedes and one species of Culex are now known to be capable of transmitting the malady. The disease occurs not only in lower animals but also in man.

"Recently in Trinidad a number of cases occurred among animals and two cases in human beings. The disease in Trinidad was studied by Major Richard T. Gilyard of the Army Veterinary Corps, who found that Mansonia tittilans is capable of transmitting the infection. This is the first demonstration of the ability of this genus of mosquito to convey the disease. Major Gilyard's articles on the subject appeared in the April issue of The Bulletin."

"FILARIASIS.--Philip H. Hartz, Public Health Service, Curacao, N.W.I., published a paper on the "Histopathology of Filariasis" in the American Journal of Clinical Pathology, January 1944, p. 34. In 5 of 10 cases of filariasis, epithelioid cell endO- and perilymphangitis was found, sometimes combined with analogous changes in the lymph nodes. These processes seemed to be caused by the presence of living "macrofilariae," though they can still be present some time after the death of the worms. He says the changes must be considered as typical but not as specific of filariasis, and they form a strong indication for search of the worm; they should not be mistaken for tuberculosis."

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SECRET

Survey of Native Village of Waab

by
Lt. Fred M. Davenport, M.C.
Base G Malariologist

In cooperation with the 65th Naval Malaria Control Unit, a survey was made of the native village of Waab. In the sample of the population examined, the spleen rate was 99.4% positive, the blood rate 68.1% positive, and the gametocyte rate 11% positive. The detailed analysis of the data obtained follows:

a. Population: 129 children aged 0 to 14 years were examined. Of these 47.2% were between the ages of 0 to 4 years, 26.4% between 5 to 9 years, and 26.4% between 10 and 14 years of age. These age groups will be refered to hereafter as age Groups I, II, and III respectively.

b. Spleen rate:

(1) The following table shows the distribution of spleen size according to Boyd's Classification.

P.D.I	I	II	III	IV	Negative
1 or .8%	17 or 13.4%	4.7 or 37%	34 or 26.8%	28 or 22.1%	2 or 1.5%

(2) The following table shows the distribution by age group and spleen size.

	P.D.I	I	II	III	IV	Negative
Age Group I	1 or 1.6%	6 or 9.8%	23 or 37.7%	10 or 16.4%	20 or 32.8%	1 or 1.6%
Age Group II		6 or 17.7%	11 or 32.3%	13 or 38.1%	4 or 11.9%	
Age Group III		5 or 15.7%	11 or 32.3%	13 or 38.%	4 or 11.8%	1 or 2.9%

c. Blood rate:

(1) The following table shows the distribution by type of parasite.

P.V.	P.F.	P.M.	T.U.	MIXED	GAMETOCYTES	TOTAL	NEGATIVE
8 or 6.2%	32 or 24.9%	43 or 33.3%	3 or 2.5%	2 or 1.4%	14 or 11%	88 or 68.1%	41 or 31.8%

Both mixed infection were identified as P. Vivax and P. Malariae. Of the 14 Gametocyte carriers, 8 were P. Malariae and 6 were P. Falciparum.

(2) Of the 41 negative smears, 9 belonged to age group I, 12 to age group II, and 20 to age group III. The following table shows the number of negative smears in each spleen size classification.

	P.D.I.	I	II	III	IV	NEGATIVE
Cases with Negative smears	0	4	12	19	5	1

(3) Of the 14 gametocyte carriers, 9 belonged to age group I, 4 to age group II, and 1 to age group III. The following table shows the number of gametocyte carriers in each spleen size classification.

	P.D.I.	I	II	III	IV	NEGATIVE
Cases with gametocytes	0	3	7	0	4	0

(4) 25 adults were studied by blood smear. Splenic examination was not attempted. 2 out of 25, or 4% were found positive, one type undetermined, and one P. Malariae. No gametocytes were seen. The preponderence of gametocytes in the younger age groups, emphasize the futility of attempting to control malaria by Plasmochin therapy.

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Locations of the Malaria Control and Survey Units will probably be of interest to all.

Survey	Component	Location
1st	14th Corps	Bougainville
2nd	6th Army	Toem
3rd	14th Corps	Bougainville
4th	5th AF	Biak
5th	6th Army	Oro Bay
6th	6th Army	Hollandia
17th	USASOS	Oro Bay
21st	14th Corps	New Georgia
22nd	14th Corps	Emirau Island
23rd	14th Corps	Bougainville
24th	USASOS	Lae
26th	6th Army	Sansapor
27th	6th Army	Aitape
28th	6th Army	Admiraltys
29th	6th Army	Biak
30th	5th AF	Sansapor
31st	5th AF	Finschhafen
32nd	5th AF	Nadzab
33rd	6th Army	Cape Gloucester
37th	USASOS	Lae
38th	6th Army	Wadke
39th	6th Army	Noemfoor
40th	USASOS	Finschhafen
41st	USASOS	Milne Bay
204th	6th Army	Toem
205th	6th Army	Oro Bay
207th	13th AF	
208th	USASOS	Oro Bay
209th	13th AF	Oro Bay
210th	13th AF	Oro Bay
211th	6th Army	Oro Bay
213th	14th Corps	Treasury

Control	Component	Location
1st	14th Corps	Goodenough
2nd	6th Army	Wakde
3rd	14th Corps	Bougainville
4th	USASOS	Hollandia
5th	6th Army	Biak
6th	5th AF	Hollandia
7th	6th Army	Hollandia
8th	USASOS	Hollandia
9th	USASOS	Finschhafen
10th	USASOS	Lae
11th	5th AF	Hollandia
12th	6th Army	Sansapor
13th	5th AF	Noemfoor
14th	5th AF	Owi
15th	6th Army	Toem
26th	14th Corps	Bougainville
34th	14th Corps	New Georgia

Control	Component	Location
35th	6th Army	Admiraltys
37th	14th Corps	Bougainville
38th	14th Corps	Toem
52nd	6th Army	Aitape
53rd	6th Army	Aitape
54th	6th Army	Wakde
55th	6th Army	Hollandia
56th	6th Army	Biak
58th	6th Army	Wakde
59th	6th Army	Noemfoor
60th	6th Army	Toem
61st	6th Army	Sansapor
62nd	5th AF	Sansapor
63rd	5th AF	Toem
64th	USASOS	Lae
65th	6th Army	Cape Gloucester
67th	6th Army	Oro Bay
68th	USASOS	Milne Bay
69th	USASOS	Milne Bay
79th	5th AF	Finschhafen
80th	5th AF	Hollandia
81st	5th AF	Biak
82nd	5th AF	Finschhafen
83rd	USASOS	Finschhafen
84th	13th AF	Finschhafen
85th	USASOS	Saidor
86th	13th AF	Finschhafen
87th	13th AF	Finschhafen
88th	13th AF	Finschhafen
89th	13th AF	Oro Bay
90th	6th Army	Oro Bay
91st	6th Army	Oro Bay
92nd	6th Army	Oro Bay
93rd	6th Army	Oro Bay
94th	USASOS	Oro Bay
95th	USASOS	Oro Bay
96th	USASOS	Oro Bay
110th	14th Corps	Treasury Island

And on the water enroute to Hollandia are the 97th through 106th Malaria Control Units.

Malariologists

Major Harold M. Jesurun, USASOS, Oro Bay
Major Donald S. Patterson, USASOS, Brisbane
Major F. J. Dy, 5th AF, Hollandia
Captain David R. Minter, 6th Army, Hollandia
Captain Edmund A. Flexman, 14th AA Command
Captain James H. Coffey, 5th AF, Sansapor
Captain Vincent Handy, USASOS, Hollandia
Captain Virgil C. McMahan, 5th AF, Hollandia
Lieutenant D. Kirkham, USASOS, Finschhafen
Lieutenant Fred Davenport, USASOS, Hollandia
Major H. A. Poindexter, Bougainville
Major Milton L. Floxks, Munda
Major Beerman, Emirau
Captain John Weir, Bougainville
Captain Louis G. Welt, Green Island
Captain Joseph C. Sweeney, New Georgia
Captain W. C. Anderson, USASOS, Milne Bay
Captain Thomas S. White, USASOS, Biak

MALARIA ATTACK RATE per/1000/annum for month of May 1944, for the weeks ending:

	USASOS	Sixth Army	5th AF	14th AF	USAFFE
Milne Bay					
7 July	9	0		13	121
14	6.7	0		0	68
21	6.5	0		13	96
28	10	0		0	70
Oro Bay - Dobodura					
7 July	48	41	109	0	25
14	42	26	133	0	11
21	34	68	67	0	19
28	32	30	16	45	11
Finschhafen					
7 July	20.8	15.2	20.8	19.5	
14	30.3	15.0	52.0	26.0	
21	19.6	8.3	28.8	19.5	
28	15.4	21.8	17.3	45.5	
Lae					
7 July	87	0	83		
14	50	0	36		
21	53	(5 cases)*	0		
28	30	(3 cases)*	0		

* Cannot figure satisfactory rate as there are no 6th Army units stationed here.

Hollandia			
7 July	0	53	91
14	0	113	39
21	63.6	78	29
21	59.5		17
Saidor			
7 July	0	214	105
14	73	45	39
21	93	175	78
28	0	175	36

6th Army July	7	14	21	28
Cape Gloucester	13	13	18	-
Admiraltys	45	59	66	-
Aitape	122	82	78	-
Toem-Wakde	101	45	80	-
Biak	61	114	133	-
Noemfoor	0	109	334	-

SOUTH PACIFIC

Total Island Rates per/1000/annum for June

	Primary	Reccurent	Total
Emirau	26.7	31.4	58.9
Green	18.3	24.4	42.7
Bougainville	13.7	31.5	45.2
Treasury	27.3	22.1	49.4
Munda	20	30	50

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Malariologists:

This office has been receiving malaria case report cards with letters of transmittal and indorsement. Direct correspondence on malaria subject matter is authorized and these cards may be mailed direct without letters of transmittal. The saving in time and paper alone will enable the Transportation Corps to land a few more cases of repellent or bully beef.